What is claimed is:

1. A method for characterizing an electron beam treatment apparatus that comprises:

e-beam treating one or more of a predetermined type of wafer or substrate utilizing one or more sets of electron beam treatment parameters;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the one or more wafers in which thermal and/or plasma waves have been induced; and

developing data from the post-electron beam treatment measurements that provide insight into performance of the electron beam treatment apparatus.

2. The method of claim 1 wherein the one or more sets include various values of one or more of wafer temperature, electron beam dose, and electron beam energy.

3. The method of claim 2 wherein the data include plots of data as a function of one or more of wafer temperature, electron beam dose, and electron beam energy.

4. The method of claim 3 wherein the plots include mean values of the post-electron beam treatment measurements of intensity.

5. A method for characterizing an electron beam treatment apparatus at a first time and a second time that comprises:

e-beam treating one or more of a predetermined type of wafer or substrate utilizing one or more sets of electron beam treatment parameters at the first time;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the one or more wafers in which thermal and/or plasma waves have been induced;

developing data from the post-electron beam treatment measurements that provide insight into performance of the electron beam treatment apparatus at the first time;

e-beam treating one or more of a predetermined type of wafer or substrate utilizing the one or more sets of electron beam treatment parameters at the second time;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the one or more wafers in which thermal and/or plasma waves have been induced;

developing data from the post-electron beam treatment measurements that provide insight into performance of the electron beam treatment apparatus at the second time; and

comparing the data from the first time and the second time.

6. A method for characterizing a first and a second electron beam treatment apparatus that comprises:

e-beam treating one or more of a predetermined type of wafer or substrate utilizing the first electron beam treatment apparatus and utilizing one or more sets of electron beam treatment parameters;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the one or more wafers in which thermal and/or plasma waves have been induced;

developing data from the post-electron beam treatment measurements that provide insight into performance of the first electron beam treatment apparatus;

e-beam treating one or more of a predetermined type of wafer or substrate utilizing the second electron beam treatment apparatus and utilizing the one or more sets of electron beam treatment parameters;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the one or more wafers in which thermal and/or plasma waves have been induced;

developing data from the post-electron beam treatment measurements that provide insight into performance of the second electron beam treatment apparatus; and

comparing the data from the first and second electron beam treatment apparatus.

7. A method for characterizing an electron beam treatment apparatus that comprises:

making pre-electron beam treatment measurements of intensity of a probe beam reflected from a surface of a predetermined type of wafer or substrate in which thermal and/or plasma waves have been induced;

electron beam treating the wafer or substrate utilizing a predetermined set of electron beam treatment parameters;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the wafer or substrate in which thermal and/or plasma waves have been induced; and

developing data that represent differences between pre- and post-treatment measurements.

8. The method of claim 7 wherein the steps of making measurements includes making measurements utilizing a Therma-Probe® monitor tool.

9. The method of claim 7 which further comprises:

analyzing the data to provide a measure of electron beam uniformity.

10. The method of claim 9 wherein the measure comprises one or more of: (a) a mean value of the data; (b) a standard deviation of the data; (c) a parameter equal to (maximum value-minimum value) of the data divided by 2 or 3 times the mean value of the data; and (d) the standard deviation of the data divided by the mean value of the data.

11. The method of claim 10 which further comprises determining whether a percentage of data within an interval is less than a predetermined amount.

12. The method of claim 11 wherein the interval is one standard deviation of the mean.

13. The method of claim 12 wherein the predetermined amount is 0.8%.

14. A method for characterizing an electron beam treatment apparatus that comprises:

electron beam treating a standard silicon wafer utilizing a predetermined set of electron beam treatment parameters;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the wafer in which thermal and/or plasma waves have been induced; and

analyzing the measurements to provide a measure of electron beam uniformity.

15. A method for characterizing an electron beam treatment apparatus that comprises:

inducing a localized periodic heating and/or periodic plasma density at an area at a multiplicity of points on a surface of a wafer;

directing a radiation probe beam within a portion of the area periodically heated so the radiation probe beam reflects off the surface of the wafer;

measuring the intensity variations of the reflected radiation probe beam resulting from the periodic changes in reflectivity of the wafer induced by the periodic heating;

electron beam treating the wafer utilizing a predetermined set of electron beam treatment parameters;

inducing a localized periodic heating and/or periodic plasma density at an area at a multiplicity of points on a surface of the electron beam treated wafer;

directing a radiation probe beam within a portion of the area periodically heated so the radiation probe beam reflects off the surface of the electron beam treated wafer;

measuring the intensity variations of the reflected radiation probe beam resulting from the periodic changes in reflectivity of the electron beam treated wafer induced by the periodic heating; and

subtracting the intensity variations at the multiplicity of points before and after the electron beam treatment.

16. The method of claim 15 wherein directing a radiation probe beam comprises directing the probe beam at the center of the area periodically heated.

17. The method of claim 15 where inducing comprises directing an intensity modulated laser beam.

18. The method of claim 17 wherein the radiation probe beam is directed to be coincident with the intensity modulated laser beam.

19. The method of claim 18 wherein the intensity modulated laser beam and the radiation probe are focused to a spot size of 1 micron in diameter.

20. The method of claim 15 wherein measuring includes detecting utilizing a photodetector.

21. A method of chamber-to-chamber matching electron beam treatment apparatus that comprises:

for a first predetermined type of wafer or substrate, making pre-electron beam treatment measurements of intensity of a probe beam reflected from a surface of the wafer in which thermal and/or plasma waves have been induced;

electron beam treating the wafer utilizing a predetermined set of electron beam treatment parameters in a first electron beam treatment apparatus;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the wafer or substrate in which thermal and/or plasma waves have been induced;

developing data that represent differences between pre- and post-treatment measurements;

analyzing the data to provide a first measure of electron beam uniformity;

for a second wafer of the predetermined type, making pre-electron beam treatment measurements of intensity of a probe beam reflected from a surface of the wafer in which thermal and/or plasma waves have been induced;

electron beam treating the wafer utilizing the predetermined set of electron beam treatment parameters;

making post-electron beam treatment measurements of intensity of a probe beam reflected from the surface of the wafer in which thermal and/or plasma waves have been induced;

developing data that represent differences between pre- and post-treatment measurements;

analyzing the data to provide a second measure of electron beam uniformity; and

comparing the first and second measures of electron beam uniformity.